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USE OF DYNAMITE IN ANTIMALARIAL DRAINAGE OPERATIONS.

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In view of the present shortage of labor and the consequent high wages of laborers, considerable economies, both in the use of labor and in money outlay, may be effected in antimalarial drainage work by the use of dynamite, it has been demonstrated in the course of United States Public Health Service operations in the extra-cantonment zone at Camp Wheeler, Ga.

The best results were obtained in mucky areas where the mud was so deep and soft that hand excavation became slow and difficult. In these cases, the use of dynamite proved very satisfactory.

As an illustration of the savings effected by the use of dynamite, an analysis of the costs of two adjacent ditches in a large swamp in the extra-cantonment zone may be of interest.

Ditch No. 60 was excavated with dynamite. This ditch was 2,802 feet long, 12 feet wide at the top and 4 feet wide at the bottom, and averaged 5 feet deep. The number of cubic yards of material removed was 4,151.

Ditch No. 62 was excavated by laborers with picks and shovels. This ditch was 3,591 feet long, 4 feet wide and 3 feet deep. The yardage was 1,596.

The costs of excavating each ditch, not including clearing, were as follows:

	Ditch 60.	Ditch 62.
Cubic yards.....	4,151	1,596
Labor cost.....	\$308.90	\$671.75
Cost of material.....	\$1,265.10	\$38.75
Cost of excavation.....	\$1,574.00	\$710.50
Cost per cubic yard.....	\$0.39	\$0.45
Man days at \$3.....	103	224
Man days per cubic yard.....	0.024	0.140
Cubic yards per man day.....	41.66	7.14

The cost of excavation in the case of ditch 60 includes clearing out the ditch after it was dynamited. In the case of ditch 62 the cost of excavation includes the cost of a small quantity of dynamite used to facilitate the removal of large stumps.

It will be seen, therefore, that there was in this case a difference of 6 cents a cubic yard in favor of the use of dynamite. It is probable, however, that the cost of excavating ditch 60 by hand would have greatly exceeded 45 cents a cubic yard, owing to the very difficult nature of the soil—a mass of yielding mud, largely under water, in which it was almost impossible to stand up.

The great economy in the use of labor is also apparent from the above table, which indicates that with the aid of dynamite, one man accomplished nearly as much as six men using picks and shovels. The advantage of this, when labor is so badly needed, is obvious. The time saved by using explosives is also a valuable consideration in malarial control.

The method of using the dynamite was as follows: After the surface had been cleared, two rows of dynamite, about 2 feet apart, were planted in holes from 3 to 4 feet deep, the holes being spaced from 18 to 20 inches apart. A detonating cap and fuse were then connected near the middle of the section planted, and, by concussion, the whole area was exploded, excavating that section of the ditch in an instant.

The only men employed in blasting ditch 60 were two negro dynamite men and a couple of laborers who carried the material to them. After the blasting was completed a small gang was put to work removing the débris and raking out occasional ridges left in the bed of the ditch.

The method above described for use in wet swampy areas does not work satisfactorily in dry ground, since it is necessary that the earth be water-soaked in order that the concussion may explode the charges in the holes adjacent to the one fired by the fuse.

It was found that in cases where a smaller ditch was desired a single row of holes generally sufficed. For deep ditches in difficult ground, it may be necessary to use two sticks to a hole. Experiment is necessary to determine the amount of explosive required for the soil through which ditches are to be excavated.

Another use to which dynamite was profitably put was in straightening out and deepening creek channels. In the Camp Wheeler extra-cantonment zone most of the creeks have a very tortuous course, and in order to eliminate pools by increasing the velocity of flow it was necessary to improve these channels. Dynamite was used in those cases in a similar manner to that described above, with very satisfactory results.

Explosives were also used very extensively in removing stumps, etc., encountered in excavating smaller ditches. A stick or two of dynamite exploded under a stump will save several hours of labor.

PREVALENCE AND TYPES OF MALARIA.

The United States Public Health Service, in cooperation with State health departments, is collecting data regarding the prevalence of malaria and the types of infection in certain States. Card forms are mailed to the physicians each month, and when these